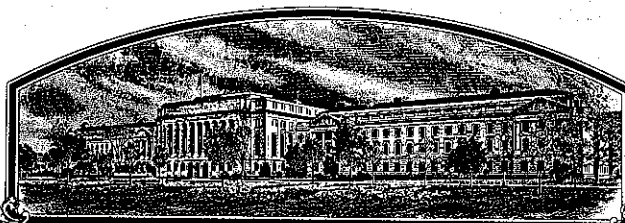


No.

9500029



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'9042'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of October in the year of our Lord one thousand nine hundred and ninety-five.

Attest:

Martha A. Hunter

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

John F. Phillips
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(INSTRUCTIONS ON REVERSE)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Pioneer Hi-Bred International, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.	3. VARIETY NAME 9042
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) 700 Capital Square 400 Locust St. Des Moines, IA 50309		5. PHONE (include area code) (515)270-3582	
6. GENUS AND SPECIES NAME Glycine max		7. FAMILY NAME (Botanical) Leguminosae	
8. CROP KIND NAME (Common Name) Soybean		9. DATE OF DETERMINATION September 1989	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Iowa		12. DATE OF INCORPORATION 1926	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS <div style="display: flex; justify-content: space-between;"> <div> John Grace 7300 NW 62nd Ave. PO Box 1004 Johnston, IA 50131-1004 </div> <div> Mike Roth (copy) 700 Capital square, 400 Locust St. Des Moines, IA 50309 </div> </div>			

FOR OFFICIAL USE ONLY

PVPO NUMBER

9500029F
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Date

NOVEMBER 8, 1994

Time

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Filing and Examination Fee:

\$ 2,325.00

Date

OCTOBER 27, 1994

Certificate Fee:

\$ 300.00

Date

SEPTEMBER 5, 1995

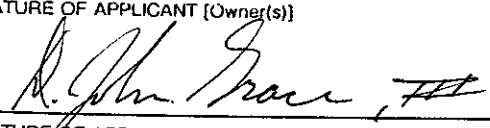
PHONE (include area code):

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)	
a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety	
b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement	
c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety	
d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety	
e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership	
f. <input checked="" type="checkbox"/> Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office 10/28/94	
g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,325) made payable to "Treasurer of the United States"	
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "YES," answer items 16 and 17 below) <input checked="" type="checkbox"/> NO (If "NO," skip to item 18 below)	
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO	17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? <input type="checkbox"/> YES (If "YES," through <input type="checkbox"/> Plant Variety Protection Act <input type="checkbox"/> Patent Act. Give date. _____) <input checked="" type="checkbox"/> NO	
19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> YES (If "YES," GIVE NAMES OF COUNTRIES AND DATES) _____ <input checked="" type="checkbox"/> NO	

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT [Owner(s)] 	CAPACITY OR TITLE Soybean Research Coordinator	DATE 10/4/94
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE

Pioneer Hi-Bred Int'l, Inc.
 PVP Application 9042 Soybean
 March 8, 1994

EXHIBIT A

Breeding History of Pioneer Brand 9042 Soybean

Year	Activity
1986 (SUMMER)	Cross was made between Pioneer Brand 9061 and CX 096.
1986 to 1988	Population was advanced by modified single seed descent.
1988	F5 bulk was planted, single plants were selected and individually threshed.
1989	Seed from individual harvested F5 plants were planted in identified rows. Breeding staff selected the line based on visual appearance from progeny row 1954 in Redwood Falls, Minnesota and designated the line 9087R027.
1990	Preliminary yield trials (test:RFD0E400, entry 18) were initiated in Minnesota. Based upon yield performance, the line was advanced to wide area regional trials in 1991.
1990-91 (winter)	Single plants were pulled from a bulk of the line grown in Santiago, Chile.
1991	Grown in multi-regional trials as W9087R027 (tests: NPA0E000, RFA0E000). Purification rows derived from single plants harvested in Chile were grown in Redwood Falls, Minnesota. Offtype sublimes were discarded.
1992	Second year in wide area tests (designation: Y9087R027; tests: RFA0L000, NPA0L000). A 2.2 acre production block (breeders seed) was grown at Redwood Falls, MN.
1993	Third year in wide area tests (designation: XB04A, tests: RFA0L000, NPA0L000, NPVL2600, NPVL2800). A 65 acre parent seed increase (foundation seed equivalent) was grown in Wahpeton, ND.
1994	Based on superior yield performance, early maturity, moderate iron-deficiency chlorosis tolerance, and multi-race Phytophthora resistance, the line was released as Pioneer Brand 9042.

'9042' has undergone four years of extensive testing and purification. It has been observed by the breeding staff to be uniform and stable for all plant traits from generation to generation, with no evidence of variants.

Pioneer Hi-Bred Int'l, Inc.
FVP Application 9042 Soybean
March 8, 1994

9500029

Exhibit B: Novelty Statement Concerning 9042 Soybean

To our knowledge, '9042' soybean is most similar to 'AP 0919', 'CX 096', and '0877'. These varieties are all of Group 0 maturity and possess purple flowers, gray pubescence, and gray hila color.

However, '9042' can be distinguished from each of the others as follows:

1. 9042, AP 0919, CX 096, and 0877 possess different isozyme profiles (Table 1).
2. 9042 matures significantly earlier than AP 0919, CX 096, and 0877 (Tables 2, 3, and 4.)

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Pioneer Hi-Bred International, Inc.	TEMPORARY DESIGNATION	VARIETY NAME 9042
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) 700 Capital Square 400 Locust St. Des Moines, IA 50309		FOR OFFICIAL USE ONLY PVPO NUMBER 9500029

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow

2 = Green

3 = Brown

4 = Black

5 = Other (Specify) _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')

2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

★ 5. HILUM COLOR: (Mature Seed)

1 = Buff

2 = Yellow

3 = Brown

4 = Gray

5 = Imperfect Black

6 = Black

7 = Other (Specify) _____

★ 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow

2 = Green

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low

2 = High

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1^a)

2 = Type B (SP1^b)

★ 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')

2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')

3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')

4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ 10. LEAFLET SHAPE:

1 = Lanceolate

2 = Oval

3 = Ovate

4 = Other (Specify) _____

11. LEAFLET SIZE:

☒ 21 = Small ('Amsoy 71'; 'A5312')
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

12. LEAF COLOR:

☒ 21 = Light Green ('Weber'; 'York')
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

★ 13. FLOWER COLOR:

☒ 2

1 = White

2 = Purple

3 = White with purple throat

★ 14. POD COLOR:

☒ 1

1 = Tan

2 = Brown

3 = Black

★ 15. PLANT PUBESCENCE COLOR:

☒ 1

1 = Gray

2 = Brown (Tawny)

16. PLANT TYPES:

☒ 31 = Slender ('Essex'; 'Amsoy 71')
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amarcor'; 'Braxton')

★ 17. PLANT HABIT:

☒ 3

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ 18. MATURITY GROUP:

☒ 0 ☒ 3

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

★ 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

★

☒ 0Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)

★

☒ 1Bacterial Blight (*Pseudomonas glycines*)

★

☒ 0Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

★

☒ 1Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)

★

☒ 0

Race 1

☒ 0

Race 2

☒ 0

Race 3

☒ 0

Race 4

☒ 0

Race 5

☐

Other (Specify)

☒ 0Target Spot (*Corynespora cassiicola*)☒ 0Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☒ 0Powdery Mildew (*Microsphaera diffusa*)

★

☒ 1Brown Stem Rot (*Cephalosporium gregatum*)☒ 0Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

- ★ ☒ 1 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)
- ☒ 1 Purple Seed Stain (*Cercospora kikuchii*)
- ☒ 1 Rhizoctonia Root Rot (*Rhizoctonia solani*)
- Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
- ★ ☒ 2 Race 1 ☒ 2 Race 2 ☒ 1 Race 3 ☒ 1 Race 4 ☒ 1 Race 5 ☐ 0 Race 6 ☒ 1 Race 7
- ☒ 1 Race 8 ☒ 1 Race 9 ☒ 2 Other (Specify) 10, 13, 16, 17, 20

VIRAL DISEASES:

- ☒ 1 Bud Blight (Tobacco Ringspot Virus)
- ☒ 1 Yellow Mosaic (Bean Yellow Mosaic Virus)
- ★ ☒ 1 Cowpea Mosaic (Cowpea Chlorotic Virus)
- ☒ 1 Pod Mottle (Bean Pod Mottle Virus)
- ★ ☒ 1 Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

- Soybean Cyst Nematode (*Heterodera glycines*)
- ★ ☐ 0 Race 1 ☐ 0 Race 2 ☒ 1 Race 3 ☐ 0 Race 4 ☐ Other (Specify) _____
- ☐ 0 Lance Nematode (*Hoplolaimus Colombus*)
- ★ ☐ 0 Southern Root Knot Nematode (*Meloidogyne incognita*)
- ★ ☐ 0 Northern Root Knot Nematode (*Meloidogyne Hapla*)
- ☐ 0 Peanut Root Knot Nematode (*Meloidogyne arenaria*)
- ☐ 0 Reniform Nematode (*Rotylenchulus reniformis*)
- ☒ 1 OTHER DISEASE NOT ON FORM (Specify): White Mold (Sclerotinia sclerotiorum)

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ★ ☒ 1 Iron Chlorosis on Calcareous Soil
- ☐ Other (Specify) _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ☐ 0 Mexican Bean Beetle (*Epilachna varivestis*)
- ☐ 0 Potato Leaf Hopper (*Empoasca fabae*)
- ☐ Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	9071	Seed Coat Luster	9061
Leaf Shape	0877	Seed Size	9041
Leaf Color	9061	Seed Shape	9041
Leaf Size	0877	Seedling Pigmentation	9061

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
9042 Submitted	126.5		67	6.8	10.7	40.7	21.9	14.3	
0877 Name of Similar Variety	134.0		66	6.6	9.7	41.2	21.4	15.2	

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

Exhibit D:

In Exhibit C we have identified 9042 as susceptible to bacterial blight, brown spot, pod and stem blight, rhizoctonia root rot, bud blight, yellow mosaic, cowpea mosaic, pod mottle, and seed mottle. This does not mean that we consider 9042 to be worse than other varieties of similar maturity in reaction to these challenges. Rather, we do not consider 9042 to be immune to them. Therefore, we have chosen to be conservative and have identified 9042 as "susceptible".

Variety 9042 is a mid group 0 variety. If group 0 maturities are divided into tenths, the relative maturity of 9042 is 0.4.

Exhibit E.

Variety '9042' was originated and developed by plant breeders from whom, by agreement, Pioneer Hi-Bred International has obtained exclusive rights to protect and market variety '9042'. No rights to such invention, discovery, or development are retained by the plant breeders or by any other party.

Pioneer Hi-Bred Int'l, Inc.
 PVP Application 9042 Soybean
 March 8, 1994

Table 1. Isozyme profiles for 9042, AP0919, CX 096, and 0877.

Variety	Isozyme											
	ACO2	ACO3	ACO4	ACP	DIA	ENP	IDH1	IDH2	MDH	MPI	PGM1	PHI1
	----- Allele designations -----											
9042	2	1	1	A	B	A	1	2	A	B	1	2
AP0919	2	1	3	A	-	A	2	2	A	B	1	1
CX 096	2	1	3	A	B	A	1	2	A	-	1	2
0877	2	1	-	A	B	A	2	2	A	-	1	2

Key:

Aconitase: ACO2, ACO3, ACO4
 Acid Phosphatase: ACP
 Diaphorase: DIA
 Endopeptidase: ENP
 Isocitrate Dehydrogenase: IDH1, IDH2
 Malate Dehydrogenase: MDH
 Mannose 6-Phosphate Isomerase: MPI
 Phosphoglucomutase: PGM
 Phosphoglucose Isomerase: PHI

Table 2. Paired comparison of 9042 versus AP 0919 for days to maturity.

All observations are from plots planted using a randomized complete block design. Planted plot length was 21 feet. Plot width was four 30 inch rows, or ten feet. Maturity was scored as the number of days from planting until 95% of the pods in the plot were mature. Data was taken in years identified.

1992						
REP	9042	AP 0919	X1-X2	(X1-X2)**2	SD**2=	(245-(31**2/4)) / (4*3)
1	128	134	-6	36	=	0.395833
2	124	132	-8	64	SD =	0.629153
3	125	133	-8	64	t=	7.75/0.63
4	127	136	-9	81		12.3 ** significant at the 1% level
					df=	3
sum	504	535	-31	245		
ave	126	133.75	-7.75		n=	4 groups of individuals

9042 maturity = 126 days
AP0919 maturity = 133.75 days

1993						
REP	9042	AP0919	X1-X2	(X1-X2)**2	SD**2=	(456-(46**2/6)) / (6*5)
1	135	140	-5	25	=	3.444444
2	135	139	-4	16	SD =	1.855921
3	124	129	-5	25	t=	7.67/1.86
4	125	130	-5	25		4.12 ** significant at the 1% level
5	121	135	-14	196	df=	5
6	119	132	-13	169		
					n=	6 groups of individuals
sum	759	805	-46	456	9042 maturity	= 126.5 days
ave	126.5	134.17	7.67		AP0919 maturity	= 134.2 days

1992 and 1993 Combined Data						
REP	9042	AP0919	X1-X2	(X1-X2)**2	SD**2=	(701-(77**2/10)) / (10*9)
1	135	140	-5	25	=	1.201111
2	135	139	-4	16	SD =	1.095952
3	124	129	-5	25	t=	7.7/1.1
4	125	130	-5	25		7.0 ** significant at the 1% level
5	121	135	-14	196	df=	9
6	119	132	-13	169		
7	128	134	-6	36	n=	10 groups of individuals
8	124	132	-8	64		
9	125	133	-8	64	9042 maturity	= 126.3 days
10	127	136	-9	81	AP0919 maturity	= 134 days
sum	1263	1340	-77	701		
ave	126.3	134	-7.7			

Table 3. Paired comparison of 9042 versus CX 096 for days to maturity.

All observations are from plots planted using a randomized complete block design. Planted plot length was 21 feet. Plot width was four 30 inch rows, or ten feet. Maturity was scored as the number of days from planting until 95% of the pods in the plot were mature. Data was taken in years identified.

1992					
REP	9042	CX 096	X1-X2	(X1-X2)**2	SD**2= (592-(48**2/4)) / (4*3)
1	128	138	-10	100	= 1.333333
2	124	134	-10	100	SD = 1.154701
3	125	139	-14	196	t= 12/1.15
4	127	141	-14	196	10.4 ** significant at
					3 the 1% level
					df=
sum	504	552	-48	592	
ave	126	138	-12		n= 4 groups of individuals

9042 maturity = 126 days
CX 096 maturity = 138 days

1993					
REP	9042	CX 096	X1-X2	(X1-X2)**2	SD**2= (619-(55**2/6)) / (6*5)
1	135	140	-5	25	= 3.827778
2	135	140	-5	25	SD = 1.956471
3	124	136	-12	144	t= 9.17/1.96
4	125	130	-5	25	4.68 ** significant at
5	121	133	-12	144	5 the 1% level
6	119	135	-16	256	df=
					n= 6 groups of individuals
sum	759	814	-55	619	
ave	126.5	135.67	-9.17		9042 maturity = 126.5 days
					CX 096 maturity = 135.7 days

1992 and 1993 Combined Data

REP	9042	CX 096	X1-X2	(X1-X2)**2	SD**2= (1211-(103**2/10)) / (10*9)
1	135	140	-5	25	= 1.667778
2	135	140	-5	25	SD = 1.291425
3	124	136	-12	144	t= 10.3/1.29
4	125	130	-5	25	7.98 ** significant
5	121	133	-12	144	9 at the 1% level
6	119	135	-16	256	df=
7	128	138	-10	100	n= 10 groups of individuals
8	124	134	-10	100	
9	125	139	-14	196	9042 maturity = 126.3 days
10	127	141	-14	196	CX 096 maturity = 136.6 days
sum	1263	1366	-103	1211	
ave	126.3	136.6	-10.3		

Pioneer Hi-Bred Int'l, Inc.
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Table 4. Paired comparison of 9042 versus 0877 for days to maturity.

All observations are from plots planted using a randomized complete block design. Planted plot length was 21 feet, trimmed to 15 feet. Plot width was 4 30 inch rows, or 10 feet. Maturity was scored as the number of days from planting until 95% of the pods in the plot were mature. Data was taken in 1993.

Year/Location/Rep	9042 (X1)	0877 (X2)	(X1-X2)	(X1-X2) ²
----- days -----				
1993 101A Rep 1	135.0	138.0	-3.0	9.00
1993 101A Rep 2	135.0	138.0	-3.0	9.00
1993 104A Rep 1	124.0	134.0	-10.0	100.00
1993 104A Rep 2	125.0	135.0	-10.0	100.00
1993 106A Rep 1	121.0	127.0	-6.0	36.00
1993 106A Rep 2	119.0	132.0	-13.0	169.00
SUM	759.0	804.0	-45.0	423.00
MEAN	126.5	134.0	-7.5 = \bar{d}	

N = 6 groups of individuals

$$SE\ DIFF\ (s_{\bar{d}}) = \sqrt{\frac{423 - [(-45)^2 / 6]}{(6)(5)}} = 1.69$$

$$T = |\bar{d} / s_{\bar{d}}| = \frac{7.5}{1.69} = 4.44, \text{ significant for 5 degrees of freedom at the 0.01 level.}$$